Monitoring Relays
1-Phase True RMS AC/DC Over or Under Voltage
Types DUB01, PUB01

CARLO GAVAZZI


DUB01


PUB01

- **TRMS AC/DC over or under voltage monitoring relays**
- **Selection of measuring range by DIP-switches**
- **Measuring ranges from 0.1 to 500 V AC/DC**
- **Adjustable voltage on relative scale**
- **Adjustable hysteresis on relative scale**
- **Adjustable delay function (0.1 to 30 s)**
- **Programmable latching or inhibit at set level**
- **Output: 8 A SPDT relay N.D. or N.E. selectable**
- **For mounting on DIN-rail in accordance with DIN/EN 50 022 (DUB01) or plug-in module (PUB01)**
- **22.5 mm Euronorm housing (DUB01) or 36 mm plug-in module (PUB01)**
- **LED indication for relay, alarm and power supply ON**

Product Description

DUB01 and PUB01 are precise TRMS AC/DC over or under voltage (selectable by DIP-switch) monitoring relays. Owing to the built-in latch function, the ON-position of the relay output can be maintained. Inhibit function can be used to avoid relay operation when not desired (maintenance, transitions). The LED's indicate the state of the alarm and the output relay.

Ordering Key

DUB 01 C B23 10V

- **Housing**
- **Function**
- **Type**
- **Item number**
- **Output**
- **Power supply**
- **Range**

Type Selection

Mounting	Output	Measuring range	Supply: 24 VDC	Supply: 24/48 VAC	Supply: 115/230 VAC
DIN-rail	SPDT	0.1 to 10 V AC/DC	**DUB 01 C 724 10V**	**DUB 01 C B48 10V**	**DUB 01 C B23 10V**
		2 to 500 V AC/DC	**DUB 01 C 724 500V**	**DUB 01 C B48 500V**	**DUB 01 C B23 500V**
Plug-in	SPDT	0.1 to 10 V AC/DC	**PUB 01 C 724 10V**	**PUB 01 C B48 10V**	**PUB 01 C B23 10V**
		2 to 500 V AC/DC	**PUB 01 C 724 500V**	**PUB 01 C B48 500V**	**PUB 01 C B23 500V**

Input Specifications

Input			
Voltage level		DUB01: Terminals Y1, Y2 PUB01: Terminals 5, 7	
Measuring ranges			
		Internal resist.	**Max. volt.**
..10V:	0.1 to 1 V AC/DC	>200 kΩ	100 V
	0.2 to 2 V AC/DC	>200 kΩ	100 V
	0.5 to 5 V AC/DC	>200 kΩ	100 V
	1 to 10 V AC/DC	>200 kΩ	100 V
	Max. voltage for 1 s		200 V
..500V:	2 to 20 V AC/DC	>500 kΩ	350 V
	5 to 50 V AC/DC	>500 kΩ	350 V
	20 to 200 V AC/DC	>500 kΩ	600 V
	50 to 500 V AC/DC	>500 kΩ	600 V
	Max. voltage for 1 s		1000 V
Note: The input voltage cannot raise over 300 VAC/DC with respect to ground (PUB01 only)			
Contact input			
DUB01		Terminals Z1, Y1	
PUB01		Terminals 8, 9	
Disabled		> 10 kΩ	
Enabled		< 500 Ω	
Latch disable		> 500 ms	

Output Specifications

Output		SPDT relay
Rated insulation voltage		250 VAC
Contact ratings ($AgSnO_2$)		μ
Resistive loads	AC 1	8 A @ 250 VAC
	DC 12	5 A @ 24 VDC
Small inductive loads	AC 15	2.5 A @ 250 VAC
	DC 13	2.5 A @ 24 VDC
Mechanical life		≥ 30 x 10^6 operations
Electrical life		≥ 10^5 operations (at 8 A, 250 V, cos φ = 1)
Operating frequency		≤ 7200 operations/h
Dielectric strength		
Dielectric voltage		≥ 2 kVAC (rms)
Rated impulse withstand volt.		4 kV (1.2/50 μs)

Supply Specifications

Power supply		Overvoltage cat. III (IEC 60664, IEC 60038)
Rated operational voltage through terminals:		
A1, A2 or A3, A2	(DUB01)	
2, 10 or 11, 10	(PUB01)	
	724:	24 VDC ± 20%, insulated
	B48:	24/48 VAC ± 15% 45 to 65 Hz, insulated
	B23:	115/230 VAC ± 15% 45 to 65 Hz, insulated

Dielectric voltage	**DC supply**	**AC supply**
Supply to input	2 kV	4 kV
Supply to output	4 kV	4 kV
Input to output	4 kV	4 kV

Rated operational power	
AC	4 VA
DC	3 W

General Specifications

Power ON delay	1 s ± 0.5 s or 6 s ± 0.5 s
Reaction time	(input signal variation from -20% to +20% or from +20% to -20% of set value)
Alarm ON delay	< 100 ms
Alarm OFF delay	< 100 ms
Accuracy	(15 min warm-up time)
Temperature drift	± 1000 ppm/°C
Delay ON alarm	± 10% on set value ± 50 ms
Repeatability	± 0.5% on full-scale
Indication for	
Power supply ON	LED, green
Alarm ON	LED, red (flashing 2 Hz during delay time)
Output relay ON	LED, yellow
Environment	
Degree of protection	IP 20
Pollution degree	3 (DUB01), 2 (PUB01)
Operating temperature	-20 to 60°C, R.H. < 95%
Storage temperature	-30 to 80°C, R.H. < 95%
Housing dimensions	
DIN-rail version	22.5 x 80 x 99.5 mm
Plug-in version	36 x 80 x 87 mm
Weight	Approx. 150 g
Screw terminals	
Tightening torque	Max. 0.5 Nm acc. to IEC 60947
CE-Marking	Yes

Mode of Operation

DUB01 and PUB01 monitor both AC and DC over or under voltage.

Example 1
(no connection between terminals Z1, Y1 or 8, 9 - latch function disabled)

The relay operates when the measured value exceeds (or drops below) the set level for more than the set delay time. It releases when the voltage drops below (or exceeds) the set level (see hysteresis setting), or when power supply is interrupted.

Example 2
(connection between terminals Z1, Y1 or 8, 9 - latch function enabled)

The relay operates and latches in operating position when the measured value exceeds (or drops below) the set level for more than the set delay time. Provided that the voltage has dropped below (or has exceeded) the set point (see hysteresis setting) the relay releases when the interconnection between terminals Z1, Y1 or 8, 9 is interrupted, or power supply is interrupted as well.
The yellow LED flashes until the delay time has expired or the measured value has dropped below the set point (see hysteresis setting).

Note
When the inhibit contact is opened, if the input signal is already in alarm position, the delay time needs to elapse before relay activation.

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Function/Range/Level and Time Delay Setting

Selection of measuring range:
DIP-switch selector (1 to 2)

..10V

1 2	Input range:
ON	0.1 to 1 V
	0.2 to 2 V
	0.5 to 5 V
	1 to 10 V

..500V

1 2	Input range:
ON	2 to 20 V
	5 to 50 V
	20 to 200 V
	50 to 500 V

Selection of function:
DIP-switch selector (3 to 5)

3

Relay de-energized in normal condition.

Relay energized in normal condition.

4

Power ON delay 6 ± 0.5 s

Power ON delay 1 ± 0.5 s

5

Contact input as latch function enable. When the contact is closed, the latch function is activated. Reset of the latch condition occurs when the contact is open or by power down.

Contact input as inhibit of alarm enable. When the contact is closed the relay remains in normal position even if the alarm condition occurs.

Selection of function:
DIP-switch selector (6)

6

Over current monitoring relay. The alarm condition occurs when the current input is over the set point value.

Under current monitoring relay. The alarm condition occurs when the current input is under the set point value.

Selection of level and time delay:

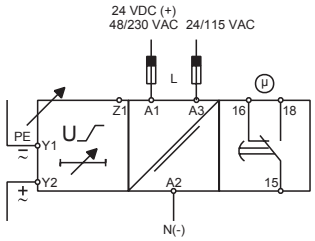
Upper knob:
Setting of hysteresis on relative scale: 0 to 30% on set value.

Centre knob:
Current level setting on relative scale: 10 to 110% on full scale.

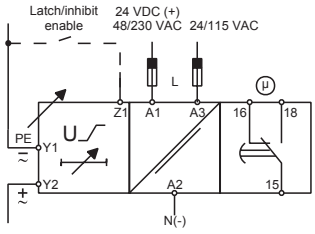
Lower knob:
Setting of delay on alarm time on absolute scale (0.1 to 30 s).

Wiring Diagrams

Example 1

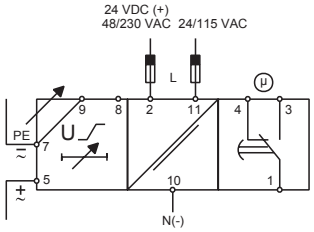


Example 2

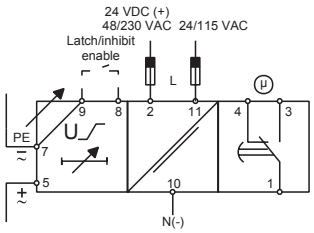


DUB01

Example 1



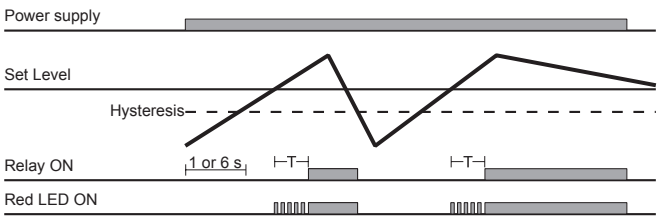
Example 2



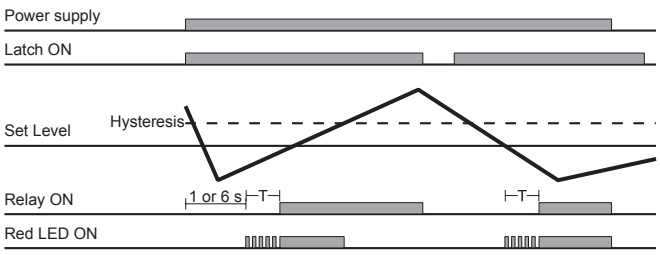
PUB01

Operation Diagrams

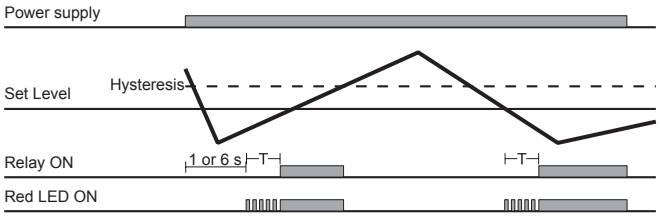
Over voltage



Under voltage - Latch function



Under voltage



Over voltage - Inhibit function